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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,730	10/25/2000	Oguz Tanrikulu	2376.2001-000	3000
21005	7590	11/17/2005	EXAMINER	
HAMILTON, BROOK, SMITH & REYNOLDS, P.C. 530 VIRGINIA ROAD P.O. BOX 9133 CONCORD, MA 01742-9133			HAROLD, JEFFEREY F	
			ART UNIT	PAPER NUMBER
			2646	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/696,730	TANRIKULU ET AL.
	Examiner	Art Unit
	Jefferey F. Harold	2646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 7/20/05.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,3-5,17,19,24,25,27,31,32,34,36,40,58,60-63,65-69 and 71-92 is/are rejected.
- 7) Claim(s) 6-16,18,20-23,26,28-30,33,35,37-39,41-57,59,64,70 and 74 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

Continuation of Disposition of Claims: Claims pending in the application are 1,3-17,19-25,27-34,36-40,42,43,45,46,48,49,51-58,60-63 and 65-92.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. ***Claims 1, 6, 12, 13, 15-17, 24, 25, 31, 32, 34, 40, 58, 63, 68, 69, 73, 77, 78, 81, 82, 85, 86, 89 and 90*** are rejected under 35 U.S.C. 102(b) as being anticipated by Canniff et al. (United States Patent 5,619,564), hereinafter referenced as Canniff.

Regarding **claim 1**, Canniff discloses a tone detector with improved performance in the presence of speech. In addition Canniff discloses a method for determining, in an electrical signal, a presence of sinusoids used to encode dialed digits, the method comprising: splitting the electrical signal into subbands of 0-1 kHz and 1-2 kHz being at a sampling frequency of less than twice the highest frequency used to encode dialed digits; and at the sampling frequency, analyzing energies within the subbands to determine the presence of the sinusoids, as disclosed at column 2, line 54 through column 4, line 32 and exhibited in figure 1.

Regarding **claim 6**, Canniff discloses everything claimed as applied above (see claim 1), in addition Canniff discloses filtering the subbands with at least one bank of filters comprising filters corresponding to the number of possible frequencies of the sinusoids within the respective subbands, as disclosed at column 2, line 54 through column 4, line 32 and exhibited in figure 1.

Regarding **claim 12**, Canninff discloses everything claimed as applied above (see claim 1), in addition Canniff discloses wherein analyzing the energies comprises determining whether a summing of the energies in the subbands exceeds a minimum threshold level, as disclosed at column 4, line 33 through column 6, line 46 and exhibited in figures 2 and 5-8.

Regarding **claim 13**, Canninff discloses everything claimed as applied above (see claim 1), in addition Canniff discloses wherein analyzing the energies comprises determining whether a difference between the energies in the subbands is below a twist- test threshold, as disclosed at column 4, line 33 through column 6, line 46 and exhibited in figures 2 and 5-8.

Regarding **claim 15**, Canninff discloses everything claimed as applied above (see claim 1), in addition Canniff discloses wherein analyzing the energies further comprises reporting valid dialed digits, as disclosed at column 4, line 33 through column 6, line 46 and exhibited in figures 2 and 5-8.

Regarding **claim 16**, Canninff discloses everything claimed as applied above (see claim 1), in addition r Canniff discloses wherein the electrical signal is sampled by an analog-to-digital converter and splitting and analyzing the electrical signal is executed by a digital processor, as disclosed at column 4, line 33 through column 6, line 46 and exhibited in figures 2 and 5-8.

Regarding **claims 17, 24, 25, 31, 32, 34, 40, 58, 63, 68, 69, 73, 77, 78, 81, 82, 85, 86, 89 and 90**, they are interpreted and thus rejected for the reasons set forth above in the rejection of claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. ***Claims 3, 4, 5, 19, 27, 36, 60-62, 65-67, 71, 72, 75, 76, 79, 80, 83, 84, 87, 88, 91 and 92*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Canniff in view of applicant's admitted prior art.

Regarding **claim 3**, Canniff discloses everything claimed as applied above (see claim 1), however, Canniff fails to disclose filtering the electrical signal using a power symmetric infinite impulse response filter. However, the examiner maintains that it was well known in the art to provide filtering the electrical signal using a power symmetric infinite impulse response filter, as taught by applicant's admitted prior art.

In addition, applicant's admitted prior art, "Design and Discrete Re-optimization of All-pass Based Power Symmetric IIR Filters" discloses highly selective low-pass power symmetric IIR filters which are well suited of sub-band decomposition in applications such as acoustic echo cancellation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Canniff by specifically providing filtering the electrical signal using a power symmetric infinite impulse response filter, as taught by applicant's admitted prior art, for the purpose of reduced computational complexity.

Regarding **claim 4**, Canniff and applicant's admitted prior art, the combination, disclose everything claimed as applied above (see claim 3), however the combination fails to disclose implementation in polyphase form. However, the examiner maintains that it was well known in the art to provide implementation in a polyphase form, as taught by applicant's admitted prior.

In addition, applicant's admitted prior art, "Adaptive Signal Processing Algorithms with Accelerated Convergence and Noise Immunity" discloses analysis and synthesis blocks of al-pass polyphase networks.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing implementation in polyphase form, as taught by applicant's admitted prior art, for the purpose of reduced computational complexity.

Regarding **claim 5**, Canniff and applicant's admitted prior art, the combination, disclose everything claimed as applied above (see claim 3), however the combination fails to disclose all-pass sections implemented in compact realizations. However, the examiner maintains that it was well known in the art to all-pass sections implemented in compact realizations, as taught by applicant's admitted prior art.

In addition, applicant's admitted prior art, "Digital All-pass Networks" discloses all-pass section implemented in various realization.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing all-pass

Art Unit: 2646

sections implemented in compact realizations, as taught by applicant's admitted prior art, for the purpose of reduced computational complexity.

Regarding claims **19, 27, 36, 60-62, 65-67, 71, 72, 75, 76, 79, 80, 83, 84, 87, 88, 91 and 92** they are interpreted and thus rejected for the reasons set forth above in the rejection of claims 3-5.

Allowable Subject Matter

3. ***Claims 6-16, 18, 20-23, 26, 28-30, 33, 35, 37-39, 41-57, 59, 64, 70, and 74*** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferey F. Harold whose telephone number is 571-272-7519. The examiner can normally be reached on Monday - Friday 9 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jefferey F Harold
Primary Examiner
Art Unit 2646



JFH
November 10, 2005